

Application No. 10/077,385
Amendment "A" dated December 5, 2003
Reply to Office Action of July 15, 2003

REMARKS

The Office Action, dated July 15, 2003, rejected claims 1-6, 12-14, 26 and 28 under 35 U.S.C. §103(a), as being unpatentable over Liu (U.S. Patent No. 6,122,169) in view of Bologna (U.S. Patent No. 6,462,670 B1). Claim 7 was rejected under 35 U.S.C. §103(a) in view of Liu and Bologna and further in view of Alfano (U.S. Patent No. 6,037,732). Claims 29-35 were rejected under 35 U.S.C. §102(e) as being anticipated by Bologna. Claims 36-37 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bologna.¹ Claims 9 and 20 were rejected under 35 U.S.C. §112 as failing to comply with the enablement requirement, which is overcome herein by amendment.² Claims 8, 10-11 and 27 were objected to for depending on a rejected base claim, but would otherwise be found allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 15-19 and 21-25 were found allowable, although claim 18 was objected to for an informality that has been remedied herein.³

By this paper claims 1, 2, 9-11, 15, 17-18, 20, 26 and 29 have been amended, dependent claims 8, 27 and 32 have been cancelled, and new claims 38 and 39 have been added. Accordingly, claims 1-7, 9-26 and 28-39 remain pending, of which claims 1, 15, 26 and 29 are the independent claims.

Inasmuch as independent claim 15 has already been allowed⁴, the only independent claims that remain at issue in this case are claims 1, 26 and 29.

¹ Although the prior art status of Bologna, Liu and Alfano is not being challenged at this time, Applicants reserve the right to challenge the purported prior art status of these references at any appropriate time, should it arise. Accordingly, any arguments made herein with regard to the cited art are only made assuming, *arguendo*, that Bologna, Liu and Alfano actually qualify as prior art references and should not, therefore, be construed as acquiescing to any prior art status of the cited references.

² Claims 9 and 20 have been amended to recite "the support structure" is configured to suppress electromagnetic energy, rather than the holes/apertures. Support for this claim is found throughout the specification, particularly in paragraphs 41 (relating to configuration of apertures), 42 (relating to a mesh screen), and 44 (relating to structural material).

³ Claim 18 was objected to for including the term "means for drawing," which did not have proper antecedent basis. Claim 18 has been amended such that the term "means for drawing" is no longer recited, thereby overcoming the objection.

⁴ Applicants have amended allowed claim 15 to remove the requirement that the fan have a diameter greater than the housing of the computing system. This limitation regarding the size of the fan diameter relative to the housing was interpreted by the Examiner as a mere design choice (P. 3, ¶ 5 of the OA), such that it should not now be interpreted as being required for the claim to be allowed.

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Claims 1 is generally directed to a computing device having a housing adapted to receive a processor, a fan mounted within the housing, and a support structure that is configured to limit electromagnetic interference caused by the processor and that also has holes formed therethrough.

Claim 26 is directed to a computing device similar to that recited in claim 1, wherein the housing also includes at least one vent so that the fan can draw air through the vent, and wherein the fan has an axis of rotation that is substantially parallel to the height of the housing.

Claim 29 is directed to a computing device comprising a housing that is adapted to receive at least one processor and a fan that is mounted within the housing, wherein the fan has a diameter and a rotational velocity that enable the fan to operate without generating high frequency acoustic noise.

Initially, it will be noted that the Examiner objected to claims 8 and 27 for depending on rejected base claims, but would otherwise be found allowable if rewritten in independent form. By this paper, Applicant has amended claims 1 and 26 to incorporate the elements recited in objected claims 8 and 27, respectively. Accordingly, claims 1 and 25 should now be found to be in condition for prompt allowance, and notwithstanding that the limitation that the fan have a diameter that is greater than the height of the housing has been eliminated from claims 1 and 25.⁵

Claim 29 has also been amended by this paper to recite that the fan is configured with a diameter and a rotational velocity that enable the fan to operate without generating high frequency acoustic noise. Support for this claim amendment is found throughout the specification and includes the following:

The acoustical noise generated by the fan is directly proportional to the rotational velocity of the fan, i.e., the RPM. Hence, a fan rotating with a high RPM creates a greater amount of acoustical noise than the same fan rotating at a low RPM. Further, the frequency of the acoustical noise created by a high RPM fan is higher than a low RPM fan. This low frequency acoustical noise is typically less distracting and noticeable than the higher frequency noise. (Para [036], ll. 2-7).

By configuring the fan with a large diameter, a relatively large flow of air is drawn into and forced from the housing of the computing device to cool the components of the computing device using a fan having a relatively low number of revolutions per minute. The relatively low rotational velocity results in a

⁵ See Footnote 4, above.

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relatively low amount of acoustic noise generated by the fan. Consequently, the computing device generates low acoustic noise. (Para [013], ll. 2-9).

In this manner, the irritating and distracting high frequency acoustic noise typical for cooling fans is eliminated, while fan 80 maintains a high volume flow rate of air. (Para. [037], ll.5-7).

Accordingly, the ability of the fan to operate without generating a high frequency acoustic noise is beneficial because low frequency acoustical noise is typically less distracting and noticeable than the higher frequency noise. Functionally, this is possible by configuring the fan with a sufficiently large diameter that the rotational velocity can be decreased, and such that the overall air flow rate generated by the fan is sufficient to cool the computing system components.⁶

The cited art fails to anticipate or obviate such an embodiment in which a computing system fan is configured with a diameter and rotational velocity to operate without generating a high frequency acoustic noise, as recited in claim 29. In particular, Bolognia, Liu and Alfano fail to provide any teaching regarding the diameter and rotational velocity of a fan and how configurations of such can alter the acoustic properties of a fan. In fact, the cited art fails to provide any teaching whatsoever regarding the acoustic properties of a fan. Accordingly, for at least these reasons, Applicants respectfully submit that the cited art fails to anticipate or make obvious the pending independent claims and, therefore, the corresponding dependent claims.

As mentioned above, new dependent claims have also been added by this paper. In particular, new dependent claim 38 recites how the fan is a variable speed fan and new dependent claim 39 recites how the fan is configured to maintain a relatively high volume flow rate of air without generating high frequency acoustic noise. These new dependent claims incorporate all of the limitations of the independent claims from which they depend, and should, therefore, also be found to be allowable for at least the reasons articulated above.⁷

⁶ This description relates to elements of claims 6 and 28 which were not given patentable weight by the Examiner because he found them to be merely narrative in form. The Examiner stated that to be given patentable weight the recited elements (e.g., low acoustic signature and selection criteria) must be expressed as a "means" with corresponding structure to warrant the presence of the functional language. After calling the Examiner, the Examiner agreed that the claim does not need to recite corresponding structure, but that such structure should be found in the specification. Applicants respectfully submit that claims 6 and 28 properly recite claim elements that are supported by the specification, as written. In particular, the description of the fan diameter and rotational velocity found throughout the specification support claims reciting a low acoustic signature.

⁷ Support for the claims is found in paragraph [054], [013], [035]-[037].

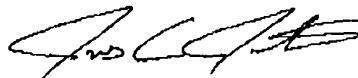
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For at least the foregoing reasons, Applicants respectfully submit that the pending claims 1-7, 9-26 and 28-39 are now in condition for prompt allowance.

In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 5th day of December 2003.

Respectfully submitted,



RICK D. NYDEGGER
Registration No. 28,651
JENS C. JENKINS
Registration No. 44,803
Attorneys for Applicant

Customer No. 022913

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